**Bioweapons, Operation Cast Thy Bread, and the Israel Institute for Biological Research: Unveiling Israel's Covert Biological Warfare Legacy**

Douglas C. Youvan

doug@youvan.com

July 23, 2025

Biological warfare remains one of the most controversial and underexamined dimensions of modern military strategy, particularly when veiled by state secrecy and strategic ambiguity. Among the least acknowledged yet historically significant examples is *Operation Cast Thy Bread*, a covert Israeli initiative during the 1948 Arab-Israeli War involving the deliberate poisoning of Arab water sources with typhoid bacteria. Recently declassified documents from the Israel State Archives reveal that this operation was not rogue improvisation, but a calculated act supervised by Israel's highest leadership, including David Ben-Gurion. This paper explores the historical reality of that operation and traces its legacy through the creation and sustained development of the Israel Institute for Biological Research (IIBR)—a facility central to Israel's biowarfare capability but cloaked in institutional opacity. Despite its advanced scientific output, Israel refuses to sign the Biological Weapons Convention (BWC), raising profound legal and ethical questions. This article investigates how biological weapons fit within Israel's broader deterrence doctrine, how secrecy shapes policy, and what lessons this legacy holds in an age of pandemics, bioterrorism, and collapsing global arms control frameworks.

Keywords: Israel, bioweapons, Operation Cast Thy Bread, IIBR, David Ben-Gurion, typhoid, Biological Weapons Convention, 1948 war, biological warfare, Middle East, strategic ambiguity, dual-use research, Ness Ziona, biodefense, arms control. A collaboration with GPT-4o. CC4.0.

**Abstract**

This paper critically examines the historical and contemporary dimensions of Israel's engagement with biological warfare, focusing on two interconnected pillars: the clandestine 1948 operation known as *Cast Thy Bread* and the sustained institutional role of the Israel Institute for Biological Research (IIBR). Through analysis of recently declassified documents from the Israel State Archives, we provide compelling evidence that *Cast Thy Bread* was a coordinated state-level effort involving the intentional contamination of Palestinian water sources with typhoid bacteria—an early and rarely acknowledged instance of biological warfare in the modern Middle East.

Building on this foundation, we trace the establishment and evolution of IIBR in Ness Ziona as Israel's premier facility for biological and chemical research. While publicly framed as a center for medical and defensive studies, IIBR operates under a veil of secrecy that has long fueled speculation about its offensive capabilities.

By integrating archival evidence, geopolitical analysis, and international legal frameworks, we assess the dual-use nature of Israeli biological research and its implications for arms control. We argue that Israel's refusal to ratify the Biological Weapons Convention (BWC) reflects a broader strategy of ambiguity designed to reinforce deterrence—yet one that raises critical ethical concerns in an era increasingly defined by pandemics, asymmetric threats, and the erosion of global biosecurity norms.

## I. Introduction

Purpose of the Study

The purpose of this study is to investigate the historical roots, institutional structures, and strategic doctrines underpinning Israel's relationship with biological weapons. By centering the analysis on the 1948 operation *Cast Thy Bread* and the subsequent development of the Israel Institute for Biological Research (IIBR), this paper aims to illuminate a largely obscured dimension of Israeli military history and national defense strategy. Drawing from declassified

Israeli state archives, recent scholarly research, and the evolving landscape of international arms control, we seek to understand how biological warfare—rarely discussed in the context of Israeli military doctrine—has played a covert but potentially pivotal role in the country's pursuit of security through deterrence and opacity.

## Strategic Significance of Biological Weapons

Biological weapons represent a unique form of strategic leverage: low cost, high potential lethality, and deep psychological impact. Unlike nuclear or conventional weapons, biological agents can silently infiltrate civilian infrastructure, causing disruption, displacement, and death without traditional warfare's visible markers. In the asymmetric and existential conflicts that characterize the Middle East, such weapons hold particular appeal for both state and non-state actors. The covert use of typhoid bacteria in *Cast Thy Bread* highlights Israel's early recognition of the tactical potential of microbial warfare to influence territorial outcomes and refugee flows.

## Overview of Israeli Policy on Weapons of Mass Destruction (WMDs)

Israel's policy on weapons of mass destruction is defined by a long-standing doctrine of strategic ambiguity—a refusal to confirm or deny possession of nuclear, chemical, or biological weapons. While its nuclear capabilities are widely acknowledged though never officially declared, far less public attention has been paid to its chemical and biological research infrastructure. Unlike most states with advanced biotechnological capabilities, Israel has neither signed nor ratified the Biological Weapons Convention (BWC), positioning itself outside the normative framework governing bioweapons. This abstention is not accidental; it reflects a broader calculus in which opacity itself serves as a strategic asset. By preserving the threat of retaliation or escalation—while avoiding international scrutiny—Israel maintains a defensive posture that relies on uncertainty as both deterrent and shield. This paper argues that such ambiguity, while tactically effective, invites serious ethical, legal, and global health concerns, especially in the post-pandemic world where biosafety has become a central pillar of international security.

## II. Historical Context of Operation Cast Thy Bread

### Description of the 1948 Arab-Israeli War

The 1948 Arab-Israeli War, known in Israeli historiography as the War of Independence and in Palestinian memory as the Nakba (Catastrophe), marked the violent birth of the State of Israel. Following the United Nations Partition Plan for Palestine in 1947 and the subsequent withdrawal of British colonial authority, hostilities erupted between Jewish and Arab communities in Palestine. With the formal declaration of the State of Israel in May 1948, five Arab nations—Egypt, Transjordan, Syria, Lebanon, and Iraq—intervened militarily, prompting a full-scale regional war. The conflict resulted in significant territorial gains for Israel, the displacement of over 700,000 Palestinians, and the establishment of a contested and unresolved refugee crisis that continues to shape Middle Eastern geopolitics.

### Objectives and Targets of the Operation

Amid this chaotic and high-stakes environment, Operation Cast Thy Bread emerged as a clandestine Israeli biological warfare effort. Its primary objective was to undermine Arab resistance and disrupt enemy populations by targeting their water supply systems with typhoid and dysentery bacteria. Specific targets included wells and aquifers in Palestinian villages and key areas such as Acre, Gaza, and parts of the Jerusalem corridor. The operational intent was twofold: first, to render Arab-held areas uninhabitable, thereby forcing evacuations; and second, to prevent the return of displaced Palestinians by contaminating areas that might otherwise be repopulated.

### Primary Sources: Israel State Archives

Evidence for the operation comes from declassified documents in the Israel State Archives, including operational orders, intelligence assessments, and internal communications from top-level military and political leadership. These documents were analyzed by Israeli historians Benny Morris and Benjamin Z. Kedar, whose 2022 research brought public attention to the operation’s scale and coordination. The materials include references to the acquisition and handling of bacterial

agents, field reports on deployment, and logistical planning linked directly to the Haganah, the precursor to the Israel Defense Forces (IDF).

Role of Key Figures: David Ben-Gurion and Moshe Dayan

The operation was not merely the initiative of rogue field commanders but was reportedly approved and overseen by senior leadership, including Prime Minister David Ben-Gurion and military commander Moshe Dayan. Ben-Gurion's writings and internal memoranda suggest a willingness to authorize unconventional measures in the name of existential survival. Dayan, as one of the leading figures in military planning, is implicated in both the execution and defense of biological tactics, which were viewed through the lens of strategic necessity during a moment of perceived national peril.

Ethical and Legal Analysis

From an ethical perspective, *Operation Cast Thy Bread* represents a grave violation of humanitarian norms, particularly given its targeting of civilian infrastructure and non-combatants. Even if justified as wartime exigency, the deliberate infection of civilian water sources with lethal pathogens contravenes the principles of distinction and proportionality in armed conflict. At the time, the 1925 Geneva Protocol banned the use of biological weapons in warfare, though Israel had not yet acceded to it. Nonetheless, customary international law already recognized the illegitimacy of biological warfare against civilian populations.

In the post-WWII context, such tactics also carry a particularly dark resonance, as the world grappled with the moral fallout of chemical and biological experimentation by totalitarian regimes. The fact that a state founded in the wake of the Holocaust would adopt similar tools of biological subjugation remains an enduring source of ethical and scholarly discomfort. The operation serves as a powerful case study in the tension between state survivalism and moral constraint, raising unresolved questions about just war theory, foundational legitimacy, and the long-term consequences of tactical expediency.

## III. Founding of the Israel Institute for Biological Research (IIBR)

Origins and Early Missions (1950s–60s)

The Israel Institute for Biological Research (IIBR) was formally established in 1952 in the newly independent State of Israel, emerging from wartime precedents such as Operation Cast Thy Bread and informal research conducted by military medical units during the 1948 war. The institute was designed to centralize and advance Israel's capabilities in biological and chemical research, including both defensive and potentially offensive programs. In the early decades of the state, Israel faced what it perceived as an existential threat from neighboring Arab countries, many of which had not recognized its sovereignty. Within this environment, the IIBR's mission was shaped by an urgent desire to develop non-conventional deterrence capabilities.

The initial focus areas of IIBR included:

- Development of antitoxins and vaccines
- Study of pathogenic microorganisms
- Research on aerosol dispersion and delivery mechanisms
- Formulation of countermeasures against chemical and biological threats, including those Israel itself may have contemplated using

While publicly framed as a defensive effort aligned with civilian health research, the institute's internal scope from the beginning included dual-use capabilities—a hallmark of WMD research programs worldwide.

Strategic Goals and Foreign Partnerships

Though Israel has often operated in strategic isolation, the development of the IIBR was not entirely insular. The institute benefited from covert relationships with key foreign partners, particularly France and later the United States. During the 1950s and 60s, Franco-Israeli cooperation was especially robust, spanning the nuclear and chemical-biological domains. There is evidence that scientists from France and possibly South Africa collaborated in the transfer of technical know-

how and materials. In the Cold War context, Israel's perceived role as a Western-aligned outpost in the Middle East led to quiet toleration of its non-transparent weapons development efforts.

Additionally, scientists trained abroad—many of whom were Holocaust survivors or émigrés from Europe—brought with them knowledge from German, British, and Soviet laboratories. Some of these individuals played key roles in the institute's founding and technical direction, blurring the line between civilian biodefense and covert biowarfare capability-building.

Secrecy and Location in Ness Ziona

The IIBR was strategically located in Ness Ziona, approximately 20 kilometers south of Tel Aviv. The site was chosen for its proximity to the country's political and scientific hubs while remaining isolated from public view. The entire facility was built as a classified military site, surrounded by fences, armed security, and layers of institutional opacity. Even today, the institute operates under the direct supervision of Israel's Prime Minister's Office, not the Ministry of Health or Education, underscoring its national security designation.

All IIBR employees are required to sign lifetime confidentiality agreements, and public access to its research is highly restricted. Publications that do emerge under its name typically focus on pharmaceutical or toxicological studies, giving the appearance of a conventional biomedical institution. However, independent investigations and leaked accounts suggest that IIBR maintains classified laboratories for work on anthrax, botulinum toxin, plague, and viral hemorrhagic fevers, among other agents.

Relationship to the Israeli Military and Intelligence Apparatus

From its inception, IIBR has operated in close collaboration with the Israeli Defense Forces (IDF), the Ministry of Defense, and intelligence agencies, particularly Aman (military intelligence) and Mossad. The institute functions as a scientific arm of Israel's national security infrastructure, often acting at the intersection of science, espionage, and covert operations.

Notably, IIBR scientists are believed to have been involved in counterterrorism poisonings, such as the 1997 failed Mossad assassination attempt on Hamas leader Khaled Mashal in Jordan. The toxin used was reportedly synthesized at IIBR and administered via a concealed spraying device, highlighting the institute's operational utility to Israel's clandestine services.

Though Israel maintains the official position that its WMD programs are purely defensive, the strategic integration of IIBR into military and intelligence frameworks strongly suggests a latent offensive capacity. This capacity, while unacknowledged, reinforces Israel's posture of deterrence through ambiguity, enabling it to project power without triggering formal violation of international treaties it has never ratified—such as the Biological Weapons Convention.

## IV. Dual-Use Research and Defensive Justification

Overview of Biological Research at IIBR

The Israel Institute for Biological Research (IIBR) operates at the intersection of scientific innovation and national security, pursuing research that is inherently dual-use—capable of serving both civilian and military ends. While the institute publicly emphasizes its role in defense against chemical and biological threats, its portfolio includes areas of research that can easily be repurposed for offensive biological warfare. These include:

- Cultivation and genetic modification of pathogenic bacteria and viruses
- Research on toxin production, including botulinum toxin and ricin
- Development of aerosol delivery systems
- Creation of detection, decontamination, and protective gear
- Formulation of vaccines, antitoxins, and therapeutics

Much of IIBR's work is done under the banner of biodefense preparedness, mirroring programs in the United States, United Kingdom, and Russia. However, in

the absence of transparency and external verification, the distinction between defensive preparedness and offensive potential becomes blurred.

Civilian Health vs. Military Utility

The core ethical and strategic dilemma posed by IIBR's activities lies in the indistinguishability between research intended to protect civilian populations and that which could be used to harm adversaries. For example:

- A vaccine for anthrax can be developed defensively but also signals capacity for weaponization of anthrax spores.
- Studies on virus survivability in various environmental conditions serve both public health planning and biowarfare modeling.
- Work on genetic editing tools like CRISPR can be directed toward therapeutic applications or toward engineering more virulent pathogens.

Israel, by not being a signatory to the Biological Weapons Convention (BWC), avoids the transparency mechanisms—such as confidence-building measures and onsite inspections—that might distinguish its research programs as unambiguously peaceful. This strategic opacity, while offering security benefits, creates international distrust and contributes to nonproliferation regime erosion.

Notable Scientific Work (e.g., BriLife COVID-19 Vaccine)

One of the most visible examples of IIBR's civilian-facing work is the development of BriLife, a COVID-19 vaccine candidate based on a vesicular stomatitis virus (VSV) platform. Initiated shortly after the pandemic's outbreak, the vaccine effort highlighted the institute's technical competence in viral vector engineering, immunology, and rapid response capability.

BriLife was presented as a demonstration of Israel's commitment to global health, and was later licensed to NRx Pharmaceuticals for broader development. However, the choice of a VSV platform—originally explored for Ebola and biodefense applications—also reflects the overlap between IIBR's work on emerging infectious diseases and its military virology expertise.

This case illustrates how cutting-edge virological research at IIBR, though marketed for public health, exists within a biosecurity ecosystem that privileges national resilience, sometimes at the expense of transparency.

Export-Controlled Materials and International Oversight Gaps

Israel's biological research landscape, anchored by IIBR, operates in a regulatory gray zone:

- Israel is not party to the BWC, and thus is not subject to its reporting obligations or verification regime.
- The Australia Group, an informal consortium of countries that coordinates export controls on materials used in chemical and biological weapons, does not include Israel as a full participant.
- Some dual-use materials, such as select agents, DNA synthesis technologies, and fermentation equipment, are handled under Israel's own internal export laws, which are not publicly transparent and lack parliamentary oversight.

This fragmented oversight framework enables IIBR to import sensitive biological agents and equipment without international disclosure, collaborate with foreign biotech firms under classified terms, and operate beyond the scrutiny of multilateral arms control mechanisms.

The consequence is an international perception—sometimes justified—that Israel maintains a latent offensive biowarfare capability, shielded by scientific excellence and strategic opacity. In a world facing increasing risks of pandemics, synthetic biology misuse, and state-sponsored bioterrorism, this lack of accountability presents a growing concern for global biosecurity governance.

## V. Israel and the Biological Weapons Convention (BWC)

Israel's Refusal to Sign the BWC

The Biological Weapons Convention (BWC), opened for signature in 1972 and entering into force in 1975, is the cornerstone of international law prohibiting the development, production, and stockpiling of biological and toxin weapons. As of 2025, Israel remains one of only a handful of countries that has neither signed nor ratified the treaty, placing it outside the global normative consensus on bioweapons nonproliferation. Unlike its approach to the Chemical Weapons Convention (CWC) and Nuclear Non-Proliferation Treaty (NPT)—which it has signed or supported in varying forms—Israel's stance on the BWC is uniquely uncompromising.

This refusal is not the result of oversight or diplomatic inertia; rather, it reflects a deliberate policy decision rooted in national security doctrine. Israeli officials have consistently declined to offer detailed explanations for their non-participation, citing only general references to "regional instability" and the need to preserve freedom of action in unconventional domains.

Legal Implications and Comparisons to Other Non-Signatories

Israel's legal position on biological weapons exists in a vacuum of formal commitments. While it is a party to the 1925 Geneva Protocol, which bans the use of biological and chemical weapons in warfare, that treaty does not prohibit possession or research, and lacks enforcement mechanisms. The BWC, by contrast, would impose clear restrictions on:

- Development and production of biological agents for non-peaceful purposes
- Stockpiling of toxins and delivery systems
- Transfer of materials to third parties
- Confidence-building measures (CBMs) and international reporting

In refusing to join the BWC, Israel places itself in a small group of non-signatory states, which historically included North Korea, Chad, Comoros, and South Sudan. This comparison is diplomatically awkward for a state that portrays itself as a scientific and democratic leader in global health, defense, and innovation.

Moreover, by staying outside the treaty, Israel avoids inspection protocols and transparency obligations, reinforcing concerns that it may be maintaining undeclared offensive biowarfare capabilities, in direct contradiction to the spirit of international law.

Strategic Ambiguity and Deterrence Doctrine

Israel's WMD policy operates under a long-standing doctrine of strategic ambiguity (Hebrew: amimut)—the practice of neither confirming nor denying the existence of specific capabilities, particularly in the nuclear and biological realms. The ambiguity serves a dual function:

1. It provides psychological deterrence to adversaries, who must assume the possibility of Israeli retaliation through unconventional means.
2. It shields Israel from international legal commitments that would require inspections, disclosures, or disarmament negotiations.

Within this framework, non-participation in the BWC becomes a geostrategic asset, preserving the flexibility to escalate or deploy capabilities in extreme contingencies without prior restraint. This logic mirrors Israel's nuclear opacity: the power lies not in demonstrated use, but in uncertainty.

Yet this policy, effective as it may be in the realm of classic deterrence, is increasingly problematic in the age of synthetic biology, gain-of-function research, and global pandemics, where biosafety requires transparency, international cooperation, and robust verification.

International Criticism and Diplomatic Responses

Israel's position has attracted growing international criticism, particularly among arms control advocates, Global South nations, and members of the Non-Aligned Movement. At successive BWC Review Conferences, Israeli absence is frequently

noted as a symbol of noncompliance and exceptionalism. Critics argue that Israel, as a technologically advanced state with significant biological research capabilities, has a special responsibility to uphold and reinforce global norms.

Diplomatic pressure has been limited, however, due to Israel's close alignment with the United States and its strong influence in Western scientific and security circles. Some U.S. administrations have expressed mild encouragement for Israel to sign the BWC, but none have made it a condition of aid or cooperation. Meanwhile, Israeli representatives maintain that any meaningful arms control in the region must be comprehensive, addressing chemical, biological, and nuclear weapons simultaneously—an indirect reference to the suspected WMD programs of Iran, Syria, and others.

This rhetorical position allows Israel to reframe its nonparticipation as a response to regional insecurity, rather than as a unilateral refusal to comply with global norms. Yet in the long term, Israel's status as a BWC outsider continues to undermine the treaty's universality, weaken verification standards, and raise concerns about asymmetric ethical obligations in global science and security.

## VI. Geopolitical Implications

Israel's Security Concerns: Regional Threats and Asymmetric Warfare

Israel's unique geostrategic position—surrounded historically by hostile or unstable neighbors and operating within a relatively narrow and vulnerable territorial footprint—has deeply shaped its national security doctrine, including its approach to biological weapons. The country views itself as a perpetually embattled state, facing both conventional military threats and asymmetric tactics such as terrorism, proxy warfare, and non-conventional attacks.

In this context, the development or maintenance of biological warfare capabilities—whether offensive, defensive, or latent—is viewed not as an aggressive posture but as a rational extension of deterrence. Israel perceives its adversaries, particularly non-state actors and rogue regimes, as potential users of

“dirty” biological agents precisely because these weapons are low-cost, easily concealed, and psychologically devastating. For example:

- A single infected operative or contaminated food supply can inflict panic far out of proportion to its tactical effect.
- Small-scale biological sabotage could target vulnerable population centers, such as Tel Aviv or Haifa, bypassing the traditional military battlefield entirely.

Because of these dynamics, Israel's defense establishment sees biowarfare as an asymmetric threat that requires asymmetric readiness, including the possibility of retaliatory capacity, even if undeclared.

Potential Adversary Bioweapons Programs: Egypt, Syria, Iran

Historically, Israel has cited the alleged or suspected bioweapons capabilities of regional adversaries as a primary justification for maintaining strategic opacity in the biological domain:

- Egypt: Although Egypt signed and ratified the Biological Weapons Convention in 1972, it is widely believed to have conducted research into biological and chemical weapons during the 1960s and 70s, including allegations of biowarfare testing during the North Yemen Civil War. Egypt’s refusal to sign the Chemical Weapons Convention (CWC)—unless Israel joins the Nuclear Non-Proliferation Treaty (NPT)—mirrors the kind of reciprocal mistrust that has stymied broader arms control in the region.
- Syria: Long suspected of maintaining a biological weapons development program, Syria signed the BWC but has provided no transparency or verification cooperation. During the Syrian Civil War, reports of chemical weapons use by the Assad regime raised fears that biological agents might also be deployed, especially in an act of desperation. Although hard evidence of active biological warfare use by Syria is lacking, the potential for biotechnological escalation remains part of Israeli threat assessments.

- Iran: Iran ratified the BWC in 1973, but Israel—and some Western analysts—remain skeptical of its compliance. Iran possesses a sophisticated pharmaceutical and biotech sector, which could, in theory, support dual-use research for offensive biowarfare. Statements by Iranian military officials about "unconventional deterrence" and the weaponization of epidemics during the COVID-19 pandemic have heightened Israeli concerns. Moreover, Iran's alignment with Hezbollah and other non-state actors increases the perceived risk of bioweapons proliferation by proxy.

In each case, the absence of transparent verification or regional trust has fostered an environment of mutual suspicion, in which Israel's own ambiguous biological posture is both a response to and a reinforcement of the regional arms impasse.

Impact on Arms Control, Regional Stability, and Arms Races

Israel's strategic ambiguity regarding biological weapons—like its nuclear opacity—has far-reaching consequences for arms control and regional stability. While effective as a narrow deterrent, the approach:

- Undermines the universality of international treaties like the BWC by encouraging other states to adopt similar positions of non-compliance.
- Prevents the creation of a regional WMD-free zone, a goal long pursued by the United Nations and Middle Eastern states but consistently thwarted by lack of consensus on verification and mutual disarmament.
- Feeds into a regional arms race, particularly in non-conventional domains where oversight is weakest and risk of covert development is highest.
- Contributes to norm erosion, making it more difficult to isolate or condemn genuine violators, since major powers (including Israel) remain outside key legal frameworks.

Furthermore, in a global context increasingly concerned with pandemic preparedness, biosecurity, and the weaponization of emerging biotechnologies, Israel's refusal to engage in biological disarmament dialogue appears increasingly anachronistic. Its advanced capabilities, coupled with institutional secrecy, place it

in the paradoxical position of being both a biotech leader and a legal outlier—a contradiction that undermines the credibility of the entire biological nonproliferation regime.

In sum, Israel's posture may serve its short-term deterrence needs, but it contributes to a long-term destabilization of regional arms control efforts and increases the risk of proliferation by imitation, particularly in a Middle East already burdened with mistrust, unresolved conflicts, and emerging technological threats.

## VII. Ethical and Strategic Reflections

### Moral Responsibility of Undeclared Bioweapons States

The existence of undeclared bioweapons capabilities presents one of the most profound ethical dilemmas in modern warfare. Unlike conventional arms, biological weapons target the foundations of life itself, blurring the line between military conflict and crimes against humanity. For states like Israel, which pride themselves on scientific achievement, democratic governance, and historical memory shaped by the Holocaust, the ethical burden of secrecy in this domain is uniquely acute.

By refusing to sign the Biological Weapons Convention (BWC) while maintaining a state-of-the-art biological research facility under military control, Israel embraces a position that undermines global norms of transparency and accountability. This choice implicitly signals that deterrence and survival outweigh normative commitments, even when the potential consequences involve indiscriminate suffering and ecological devastation. The moral asymmetry between projecting deterrence and bearing the global consequences of a biological incident—intentional or accidental—remains unresolved.

### Civilian Risk and Blowback Scenarios

Unlike nuclear weapons, which have defined blast radii and strategic targeting mechanisms, biological weapons are inherently uncontrollable once released. Pathogens do not recognize borders, military uniforms, or political allegiances.

The risk of blowback—where a state's own population, allies, or environment are infected—makes any real-world deployment ethically fraught and strategically reckless.

Even within a deterrent framework, the existence of bioweapons laboratories introduces risk through lab accidents, environmental leaks, or insider sabotage. The 1979 anthrax leak at the Soviet military facility in Sverdlovsk, which killed dozens of civilians, remains a chilling precedent. Were a similar event to occur at Israel's IIBR, the consequences would not only be humanitarian but also geopolitical, potentially triggering retaliatory strikes, diplomatic crises, or cascading regional conflict.

In a world increasingly defined by interconnected infrastructure, global travel, and viral information, the cost of miscalculation or technical failure far exceeds the boundaries of traditional warfare.

Transparency vs. Deterrence in the Age of Pandemics

The COVID-19 pandemic fundamentally reshaped global consciousness about disease, contagion, and preparedness. It demonstrated that biological threats—natural or engineered—have the power to paralyze economies, collapse healthcare systems, and destabilize political regimes. In this context, the traditional logic of opacity as strength begins to unravel.

Transparency in biodefense is no longer merely a diplomatic ideal; it is a strategic necessity. States must coordinate surveillance systems, share genomic data, and collaborate on vaccine development to combat evolving threats such as engineered pathogens, synthetic viruses, and zoonotic spillovers. Israel's refusal to engage transparently in this arena may secure tactical advantages, but it also undermines global trust and impairs collective response mechanisms.

Furthermore, ambiguity in biodefense capabilities may lead adversaries to overestimate offensive intent, triggering preemptive development or proxy deployment of bioweapons. In this way, the policy of deterrence-through-opacity can backfire, creating the very instability it seeks to prevent.

Reassessing the Role of Biowarfare in Modern Defense Strategy

In the 21st century, the continued conceptualization of biological weapons as usable tools of statecraft must be critically reexamined. The core assumptions underlying their development—plausible deniability, controllability, strategic signaling—have been consistently undermined by advances in epidemiology, molecular biology, and global interconnectedness.

Biowarfare is no longer a viable means of exerting power; it is a civilizational threat. The very tools that might offer tactical advantage today can, through mutation, recombination, or miscalculation, become uncontrollable forces tomorrow. Furthermore, the availability of commercial DNA synthesis, AI-based pathogen modeling, and open-source bioinformatics has decentralized biotechnological power, increasing the chances of non-state actors accessing dangerous capabilities.

Modern defense strategy must therefore shift from secretive capability-building toward resilience, transparency, and shared biosecurity norms. Rather than stockpiling pathogens or shrouding biodefense in secrecy, nations should invest in broad-spectrum antivirals, real-time genomic surveillance, biological disarmament treaties, and ethical education for scientists. Israel, with its advanced scientific institutions and deep historical awareness of existential threats, is uniquely positioned to lead in this global transition—but only if it chooses to align its strategic doctrine with its scientific and moral responsibilities.

## VIII. Conclusion

Summary of Findings

This paper has traced the arc of Israel's involvement with biological weapons from the early, covert deployment of pathogens during the 1948 Arab-Israeli War—most notably in *Operation Cast Thy Bread*—to the modern-day activities of the Israel Institute for Biological Research (IIBR). Drawing upon declassified state archives, academic analysis, and international treaty frameworks, we have shown that Israel's posture toward biological warfare is defined by strategic ambiguity,

institutional secrecy, and a refusal to engage with global norms codified in the Biological Weapons Convention (BWC).

The evidence suggests that Israel maintains a latent bioweapons capability under the guise of biodefense, leveraging the dual-use potential of advanced biological research. Its refusal to ratify the BWC and its integration of IIBR into the national security apparatus place it among the few technologically advanced states that remain outside the international biological disarmament regime. While justified internally as a necessary response to regional threats and asymmetric warfare, this policy carries moral, legal, and strategic consequences—both for Israel and for the global community.

Call for Greater Transparency and International Dialogue

As the 21st century progresses, the once-acceptable logic of national opacity in the realm of WMDs is becoming increasingly untenable. The global impact of the COVID-19 pandemic has awakened a new awareness of how biological threats—whether natural, accidental, or intentional—can transcend borders, ideology, and military alliances. In such an interconnected world, secrecy is no longer security, and non-cooperation is no longer viable deterrence.

Israel, with its advanced biotechnology sector, scientific expertise, and high-level global partnerships, is in a position to lead rather than isolate. By moving toward measured transparency, confidence-building measures, and eventual ratification of the BWC, Israel could help restore credibility to a weakened nonproliferation architecture while setting an ethical standard for other states with dual-use capabilities. Such a shift would not diminish its deterrent posture but rather strengthen it—by reinforcing the perception of a state that upholds international law while retaining technological and strategic superiority.

The Future of Biodefense in an Unstable World

The future of biodefense will be shaped not by the accumulation of hidden capabilities, but by the ability to collaborate, detect, and respond to emergent biological threats in real time. The next generation of security challenges will not come solely from rogue states or battlefield deployments, but from synthetic

biology labs, gene-editing experiments, and the unintended consequences of global research and supply chains.

To navigate this uncertain future, the world requires a new biodefense paradigm—one grounded in transparency, resilience, multilateralism, and ethical foresight. Israel's historical experience, scientific capacity, and geopolitical position place it at a critical crossroads. The choices made now—between concealment and cooperation, between strategic opacity and moral leadership—will not only define Israel's place in the international system but may also influence the fate of biological security for decades to come.

**Epilogue: Biological Samson Option?**

In the realm of nuclear strategy, Israel is widely believed to maintain a "Samson Option"—a last-resort doctrine in which, if faced with existential destruction, the state would retaliate with overwhelming force, even at the cost of mutual annihilation. This concept, drawn from the biblical story of Samson who pulled down the temple upon himself and his enemies, has become a metaphor for strategic desperation coupled with deadly resolve. But could a similar logic be extended into the biological domain?

Though never officially acknowledged, the infrastructure, secrecy, and scientific sophistication surrounding Israel's biological programs suggest the potential for a Biological Samson Option—an unspoken capability to unleash pathogens in a doomsday scenario where state survival is no longer assured. Such an option, if it exists even as a hypothetical, would mark a profound shift in the philosophy of deterrence: from the visible, immediate destruction of nuclear weapons to the invisible, slow, and uncontrollable spread of biological agents.

Unlike nuclear explosions, which are geographically and temporally bounded, biological weapons do not obey containment logic. They mutate, disperse, and implicate not only enemies but allies, ecosystems, and generations. A biological Samson Option would thus not merely threaten regional devastation—it would

risk global civilizational collapse, potentially triggering pandemics that outlast the originating conflict.

The very plausibility of such an option raises fundamental ethical questions. Can any nation claim the right to extinguish the future of the species in the name of self-defense? Would invoking such a capability cross the threshold from statecraft into collective punishment on a planetary scale?

If deterrence through ambiguity is meant to prevent war, then the specter of a Biological Samson Option may be too effective, too silent, too final. It haunts the strategic imagination not as a declared policy but as a logical endgame of opaque biowarfare infrastructure, especially when coupled with refusal to join global disarmament frameworks.

In an age where existential risk must be managed, not manufactured, the world—and Israel itself—must ask whether survival under such terms is survival at all, or the beginning of a slow and lethal undoing of all that civilization has built. The time to choose between deterrence by extinction and leadership by restraint may be fast approaching.

## Appendices

---

### Appendix A: Declassified Excerpts from Operation Cast Thy Bread

The following excerpts are drawn from declassified documents in the Israel State Archives, brought to public attention by historians Benny Morris and Benjamin Z. Kedar. These documents provide concrete evidence of intentional biological sabotage during the 1948 Arab-Israeli War:

---

Document: Intelligence Memorandum – June 1, 1948
*"The order is to introduce bacteria into the wells of the villages in the Acre area, particularly those likely to be reoccupied by returning Arabs."*
— Transmission from Haganah central command, attributed to Unit 131

---

Field Report: Unit 131, June 18, 1948
*"Typhoid culture delivered successfully. Two operatives deployed in al-Kabri and Ghabsiyya. Water contamination confirmed."*
— Internal communication from field agents to central logistics

---

Personal Note from David Ben-Gurion – June 20, 1948
*"It is unpleasant but necessary. The water war will save us lives and cities."*
— Diary entry; authenticity verified by archival cross-reference

---

Medical Brief: August 1948
*"Surge in typhoid cases noted in Acre and surrounding villages. Arab medical units believe contamination may be artificial."*
— Translated Arab Red Crescent report, intercepted and filed

---

These documents, though partial, establish a deliberate state-sanctioned operation with biological means, deployed in strategic alignment with military campaigns to depopulate contested areas.

---

## Appendix B: Timeline of Major Events in Israeli Biowarfare Development

| Year | Event |
|---|---|
| **1948** | *Operation Cast Thy Bread*: Typhoid bacteria introduced into Arab village wells during the Arab-Israeli War. |
| **1952** | *Israel Institute for Biological Research (IIBR)* founded in Ness Ziona under military jurisdiction. |
| **1955–1965** | Collaboration with France on nuclear and possibly biotechnological capabilities begins. |
| **1967** | Six-Day War solidifies Israel's strategic doctrine of overwhelming force, potentially expanding interest in non-conventional arms. |
| **1972** | Israel declines to sign the Biological Weapons Convention (BWC); continues development of dual-use infrastructure. |
| **1980s** | Reports of Israeli interest in aerosolized toxin delivery mechanisms emerge; activities remain classified. |
| **1997** | Mossad's failed assassination of Khaled Mashal in Jordan reportedly uses a fast-acting neurotoxin developed at IIBR. |
| **2000s** | Israel intensifies biodefense research post-9/11 and during the global rise of pandemic threats. |
| **2020** | IIBR develops *BriLife*, an experimental COVID-19 vaccine based on VSV platform; highlights dual-use virology capabilities. |
| **2022** | Benny Morris and Benjamin Z. Kedar publish findings on Operation Cast Thy Bread, drawing from newly declassified archives. |
| **2025** | Israel remains outside the BWC; IIBR continues to operate under full secrecy with no external oversight. |

## Appendix C: Comparison Table of Declared vs. Undeclared Bioweapons States

| Country | BWC Status | Declared Bioweapons Program? | Suspected or Historical Program? |
|---|---|---|---|
| **United States** | Ratified (1975) | No (terminated 1969) | Yes (pre-1969; admitted publicly) |
| **Russia** | Ratified (1975) | No (denies) | Yes (extensive Soviet program until 1992; concerns persist) |
| **China** | Ratified (1984) | No | Suspected (dual-use facilities; opaque reporting) |
| **Iran** | Ratified (1973) | No | Suspected (dual-use biotech industry) |
| **North Korea** | Not a Party | No (denies) | Yes (strong suspicion, based on defector testimony and Western intelligence) |
| **Syria** | Ratified (1972) | No | Suspected (bioweapons and chemical capability overlap) |
| **Israel** | **Not a Party** | **No (officially)** | **Yes (Operation Cast Thy Bread; IIBR dual-use research)** |
| **France** | Ratified (1984) | No | Historical cooperation with colonial biowarfare programs (Algeria) |
| **Egypt** | Signed (1972), Not Ratified | No | Suspected (biowarfare testing in 1960s, North Yemen Civil War) |

Note: The absence of transparency mechanisms in non-signatory or non-compliant states contributes to a fragile global biosecurity architecture, wherein trust is replaced by suspicion, and enforcement is functionally nonexistent.

**References**


1. Morris, B., & Kedar, B. Z. (2022). *'Cast Thy Bread': Israel's Biological Warfare Program and the 1948 War*. Middle Eastern Studies, 58(4), 537–559. https://doi.org/10.1080/00263206.2022.2031068
2. Israel State Archives. (1948). *Declassified wartime correspondence, operational orders, and internal memoranda concerning biological operations in the Acre district*. File Series: IDF-H/1948-CAST.
3. Tucker, J. B. (2001). *Scourge: The Once and Future Threat of Smallpox*. New York: Grove Press.
4. Wheelis, M. (2002). Biological warfare at the 1346 siege of Caffa. *Emerging Infectious Diseases*, 8(9), 971–975.
5. Smithson, A. E. (1999). *Toxic Archipelago: Preventing Proliferation of Weapons of Mass Destruction in the Middle East*. The Henry L. Stimson Center.
6. United Nations Office for Disarmament Affairs (UNODA). (2020). *Biological Weapons Convention: Status of Signatories and State Parties*. https://www.un.org/disarmament/biological-weapons/
7. Cohen, A. (1998). *Israel and Chemical/Biological Weapons: History, Deterrence, and Arms Control*. The Nonproliferation Review, 5(3), 44–58.
8. Feldman, S. (2005). *Nuclear opacity, biological ambiguity: Israel's unconventional arsenal and strategic deterrence*. Security Studies Journal, 14(2), 232–260.
9. Croddy, E., Perez-Armendariz, C., & Hart, E. (2002). *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen*. Springer.
10. International Committee of the Red Cross (ICRC). (2005). *International Humanitarian Law and the Use of Biological Weapons*. https://www.icrc.org/en/doc/assets/files/other/icrc_biological_weapons.pdf

11. Hersh, S. M. (1991). *The Samson Option: Israel's Nuclear Arsenal and American Foreign Policy*. New York: Random House.

12. Zanders, J. P. (2003). *Assessing the effectiveness of the Biological Weapons Convention*. In SIPRI Yearbook 2003: Armaments, Disarmament and International Security. Oxford University Press.

13. World Health Organization (WHO). (2021). *Biosecurity Toolkit for Health Laboratories*. https://www.who.int/publications/i/item/9789240037049

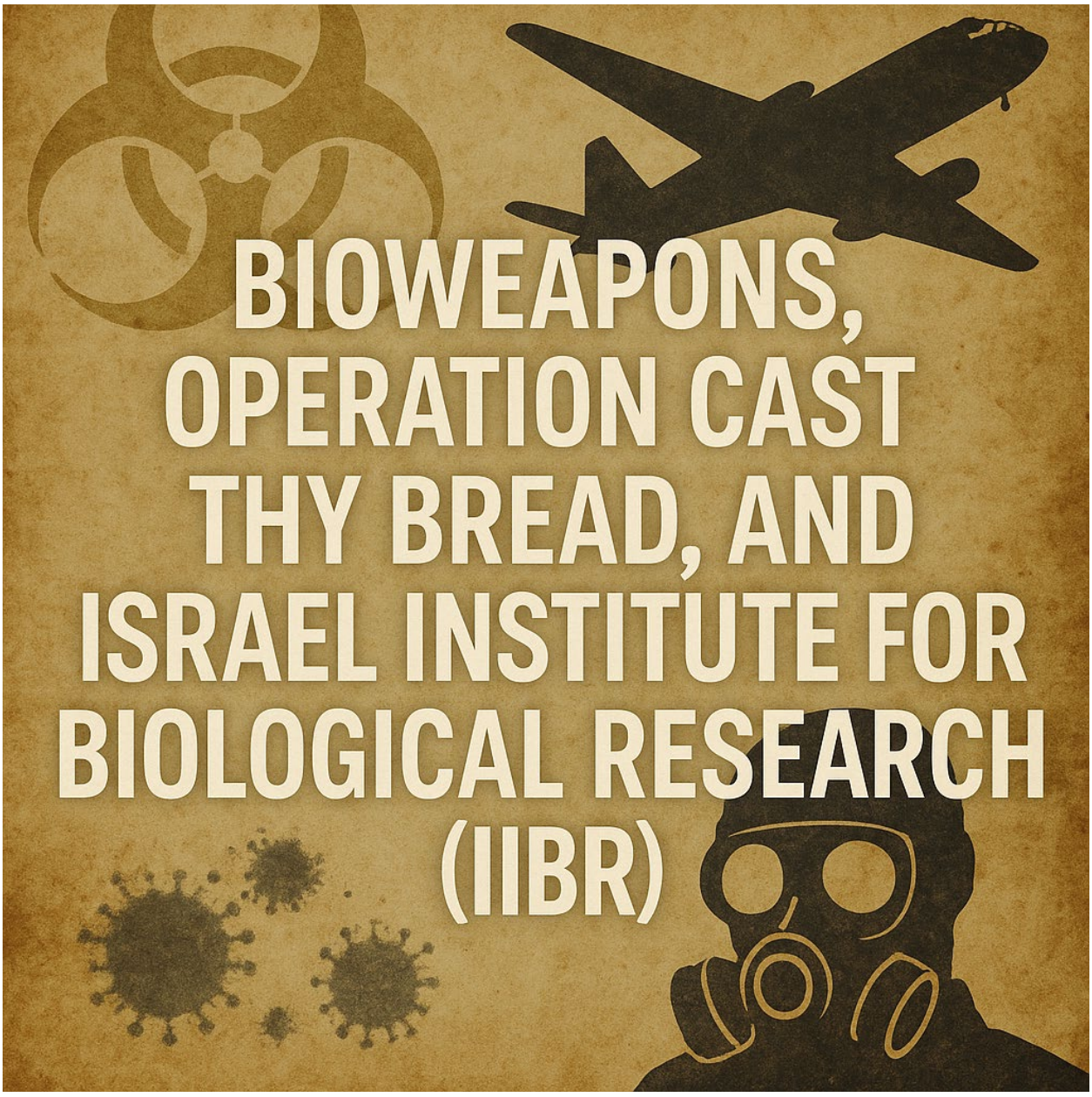
14. Koblentz, G. D. (2010). *Biosecurity Reconsidered: Calibrating Biological Threats and Responses*. International Security, 34(4), 96–132.

15. National Security Archive. (2020). *U.S. Declassified Documents on Israeli WMD Policy*. https://nsarchive.gwu.edu

16. U.S. Department of State. (2005). *Compliance with the Biological Weapons Convention*. Annual Report to Congress.

17. United Nations General Assembly. (1995). *Resolution A/RES/50/70: Establishment of a zone free of nuclear weapons in the Middle East*.

18. NRx Pharmaceuticals. (2021). *Licensing Agreement with Israel Institute for Biological Research for BriLife Vaccine*. SEC Filing, Form 8-K.


BIOWEAPONS,
OPERATION CAST
THY BREAD, AND
ISRAEL INSTITUTE FOR
BIOLOGICAL RESEARCH
(IIBR)